

CLAIMS:

1. A composition for degrading biofilm structure associated with cystic fibrosis and the debris associated therewith, the composition comprising:

5 an enzyme selected for its ability to dismantle the biofilm structure;

an anchor molecule coupled to an enzyme to form an enzyme-anchor complex, the anchor molecule being selected for its ability to attach to a surface on or proximal the biofilm structure;

10 wherein the attachment to the surface permits prolonged retention time of the enzyme-anchor complex where the biofilm structure and associated debris are present.

2. A composition as claimed in claim 1 wherein the enzyme is selected for its ability to degrade a colonizing matrix.

3. A composition as claimed in claim 1 wherein the enzyme-anchor complex is a fusion protein.

20 4. A composition as claimed in claim 1 wherein the enzyme-anchor complex is constructed using chemical synthesis techniques.

5. A composition as claimed in claim 1 wherein the enzyme-anchor complex contains alginate lyase to degrade the biofilm structure.

25 6. A composition as claimed in claim 1 wherein the enzyme-anchor complex further contains DNase to degrade debris which are byproducts of the degraded biofilm structure.

30 7. A composition as claimed in claim 1 wherein the enzyme-anchor

complex comprises an anchor having an alginate-binding domain.

8. A composition as claimed in claim 7 wherein the alginate-binding domain is derived from elastase.

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9. A composition as claimed in claim 7 wherein the alginate-binding domain is derived from a glycosyltransferase enzyme.

10. A composition as claimed in claim 7 wherein the alginate-binding domain is derived from an alginate polymerase enzyme.

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11. A composition as claimed in claim 7 wherein the alginate binding domain is a mannose binding lectin.

12. A composition as claimed in claim 7 wherein the alginate-binding domain is derived from heparin.

13. A composition as claimed in claim 7 wherein the alginate-binding domain is derived from fibronectin.

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14. A composition as claimed in claim 7 wherein the alginate-binding domain is derived from Concanavalin A.

15. A composition as claimed in claim 7 wherein the alginate-binding domain is derived from a lectin.

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16. A composition as claimed in claim 7 wherein the alginate-binding domain is derived from a selectin.

17. A composition as claimed in claim 7 wherein the alginate-

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binding domain is derived from the CD44 protein.

18. A composition as claimed in claim 1 further comprising an additional enzyme-anchor complex comprised of an enzyme selected for its ability to act upon debris and byproducts associated with the biofilm structure degradation coupled to an anchor selected for its ability to attach to a surface on or proximal the biofilm structure.

19. A composition claimed in claim 18 wherein the enzyme-anchor complex is a fusion protein.

20. A composition as claimed in claim 18 wherein the enzyme-anchor complex is constructed using chemical synthesis techniques.

21. A composition claimed in claim 18 wherein the additional enzyme-anchor complex comprises an anchor having an alginate-binding domain.

22. A composition claimed in claim 18 wherein the enzyme-anchor complex contains a proteinase.

23. A composition as claimed in claim 18 wherein the enzyme-anchor complex has the capability to act on DNA.

24. A composition claimed in claim 23 wherein the enzyme-anchor complex contains DNase.

25. A composition claimed in claim 18 wherein the enzyme-anchor complex contains mucinase.

26. A composition claimed in claim 18 wherein the enzyme-anchor complex is a cell wall degrading enzyme.

27. A composition claimed in claim 18 wherein the enzyme-anchor complex contains a glycosaminoglycan hydrolase.

28. A composition claimed in claim 18 wherein the enzyme-anchor complex contains a peptidoglycan hydrolase.

29. A composition claimed in claim 18 wherein the enzyme-anchor complex contains proteoglycan hydrolase.